-14-PNL-013

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April 25, 1994

Mr. D. Every
Dames and Moore
2025 1st Avenue
Seattle, WA 98121

Dear Mr. Every,

BIOLOGICAL REVIEW OF THE MULTI-FUNCTION WASTE TANK FACILITY (MWTF) AND THE CROSS-SITE TRANSFER LINE (CSTL), #94-PNL-013

SUMMARY AND RECOMMENDATIONS

The sites proposed for the MWTF and the CSTL consist largely of contiguous sagebrush (*Artemisia tridentata*) habitat, which is considered a priority habitat by the state of Washington. Sagebrush habitat along the proposed CSTL and within the proposed MWTF sites is a requirement for nesting/breeding/foraging by the following species of concern identified in the biological review. The loggerhead shrike (*Lanius ludovicianus* - federal candidate level 2 and state threatened) and sage sparrow (*Amphispiza belli* - state candidate) were using the sites proposed for the MWTF and the CSTL. Piper's daisy (*Erigeron piperianus* - state sensitive) was sighted in the gravel pit on the west side of the MWTF site at 200 East and stalked-pod milkvetch (*Astragalus sclerocarpus* - state monitor 3) was observed on sites proposed for the MWTF and the CSTL.

Two mammalian species, the sagebrush vole (*Lagurus curtatus* - state monitor), and Washington ground squirrel (*Spermophilus washingtoni* - state monitor); and six avian species, the ferruginous hawk (*Buteo regalis* - federal candidate level 2 and state threatened), burrowing owl (*Athene cunicularia* - state candidate), Swainson's hawk (*Buteo swainsoni* - state candidate), sage thrasher (*Oreoscoptes montanus* - state candidate), long-billed curlew (*Numenius americanus* - federal candidate level 3 and state monitor), and red-tailed hawk (*Buteo jamaicensis* - state sensitive) may potentially be using the sites proposed for the MWTF and the CSTL, based on known habitat associations.

Populations of the above species will probably not be substantially impacted by construction of the proposed MWTF and CSTL. However, development of these sites will eliminate a large portion of sagebrush habitat directly, and will contribute to fragmentation of the remaining habitat. The response of these species to fragmentation cannot currently be predicted in any detail and their level of resiliency is unknown. The cumulative effects of this and further fragmentation will probably decrease the long-term viability of these species on Hanford. Therefore, it is essential to develop methods for

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predicting effects and plans for mitigating the cumulative losses and fragmentation of sagebrush habitat on the Hanford Site.

BIOLOGICAL REVIEW

The objectives of this biological review were:

- to obtain an inventory of plants and animals present on or using the sites proposed for the multi-function waste tank facility (MWTF) and cross-site transfer line (CSTL)
- to describe habitats on the sites
- to identify species potentially using the site, based on known habitat associations, that were otherwise undetected during the survey
- to identify plant and animal species protected under the Endangered Species Act, candidates for such protection, and species listed as threatened, endangered, candidate, sensitive, or monitor by the state of Washington
- to evaluate the potential impacts of the development of the sites proposed for the MWTF and CSTL on the protected species and sensitive habitats noted above.

Field assessments at the proposed MWTF in the southeast corner of 200 West were conducted by J. M. Becker, B. L. Tiller, and R. Zufelt on April 18; at the proposed MWTF site in 200 East by C. A. Brandt, J. M. Becker, and R. Zufelt on April 20; and at the proposed CSTL by C. A. Brandt, J. M. Becker, and R. Zufelt on April 21, 1994. Field assessments were conducted by walking transects at 20 m intervals.

All plant and animal species observed were recorded and habitats were classified according to dominant shrub and grass species. Locations of federal and state listed plant and animal species observed during the survey were determined using a global positioning system.

Topography on the sites proposed for the MWTF and CSTL is level. These sites are located in various habitat types. Table 1 provides a list of those sites with their primary habitat components.

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Table 1. Primary shrub and grass species on sites proposed for the multi-function waste tank facility (MWTF) and the cross-site transfer line (CSTL).

	Primary habitat components		
Site	Scientific name	Common name	Substrate
MWTF at 200 West (undisturbed portion)	*Artemisia tridentata* *Bromus tectorum* *Poa sandbergii*	big sagebrush cheatgrass Sandberg's bluegrass	sand
MWTF at 200 West (disturbed portion)	*Bromus tectorum* *Chrysothamnus nauseosus* *Salsola kali*	cheatgrass grey rabbitbrush Russian thistle	sand
MWTF at 200 East (undisturbed portion)	*Artemisia tridentata* *Bromus tectorum* *Chrysothamnus nauseosus* *Poa sandbergii*	big sagebrush cheatgrass grey rabbitbrush[a] Sandberg's bluegrass	silty loam
gravel pit portion of MWTF at 200 East	*Bromus tectorum* *Salsola kali* *Sisymbrium altissimum*	cheatgrass Russian thistle tumble mustard	gravel
CSTL between 200 East and 200 West	*Artemisia tridentata* *Bromus tectorum* *Grayia spinosa* *Poa sandbergii*	big sagebrush cheatgrass spiny hopsage[b] Sandberg's bluegrass	sand
CSTL in 200 East west of railroad tracks	*Artemisia tridentata* *Bromus tectorum* *Poa sandbergii*	big sagebrush cheatgrass Sandberg's bluegrass	silty sand
CSTL in 200 East east of railroad tracks	*Agropyron cristatum* *Chrysothamnus nauseosus*	crested wheatgrass grey rabbitbrush	silty sand
CSTL in 200 West	*Bromus tectorum* *Chrysothamnus nauseosus* *Poa sandbergii*	cheatgrass grey rabbitbrush Sandberg's bluegrass	silty sand

a this species was present only on the southwest corner of the MWTF site at 200 East.

b this species was present only in small numbers on this portion of the CSTL.

Table 2 provides a list of animal/plant species of concern observed during the field assessment.

14-PSL-013

DRAFT

Table 2. Federal and state listed animal and plant species observed on the sites proposed for the MWTF and CSTL.

Site	Species of concern: Scientific name	Common name	Federal status[a]	State status[b]	Critical habitat[c]
MWTF at 200 West (undisturbed portion)	*Amphispiza belli*	sage sparrow[d]	none	candidate	shrubsteppe
	Lanius ludovicianus	loggerhead shrike[e]	candidate 2	candidate	shrubsteppe
MWTF at 200 East (undisturbed portion)	*Amphispiza belli*	sage sparrow	none	candidate	shrubsteppe
	Lanius ludovicianus	loggerhead shrike[f]	candidate 2	candidate	shrubsteppe
gravel pit portion of MWTF at 200 East	*Erigeron piperianus*	Piper's daisy[g]	none	sensitive	disturbed areas/ gravely areas/ sand/shrubsteppe
CSTL between 200 East and 200 West	*Amphispiza belli*	sage sparrow[h]	none	candidate	shrubsteppe
	Lanius ludovicianus	loggerhead shrike[i]	candidate 2	candidate	shrubsteppe
MWTF and CSTL	*Astragalus sclerocarpus*	stalked-pod milkvetch[j]	none	monitor 3	sand/shrubsteppe

[a] Federal status for plant species taken from U. S. Department of Interior, U. S. Fish and Wildlife Service: 50 CFR Part 17, Endangered and Threatened Wildlife and Plants, Review of Plant Taxa for Listing as Endangered or Threatened Species, Proposed Rules, September 30, 1993. Federal status for animal species taken from U. S. Department of Interior, U. S. Fish and Wildlife Service: 50 CFR 17 Endangered and Threatened Wildlife and Plants, Animal Candidate Review for Listing as Endangered or Threatened Species, Proposed Rule, November 21, 1991.

[b] State status for plant species taken from Washington Department of Natural Resources: Endangered, Threatened, and Sensitive Vascular Plants of Washington, 1994. State status for animal species taken from Washington Department of Wildlife: Species of Special Concern in Washington State - State and Federal Status, October 11, 1993.

[c] Critical habitat for animal species taken from Washington Department of Wildlife: Priority Habitats and Species, November, 1993.

[d] one nesting pair was observed. This pair probably has a nest nearby as evidenced by the pair's territorial display.

[e] one individual was observed perching on the north end of the site.

[f] One individual was observed while perching and three others were heard singing.

[g] One individual was observed on the eastern edge of the gravel pit.

[h] Three individuals were observed while perching; a fourth individual was observed in a territorial display (indicative of a nearby nest); and fifth individual was heard singing.

[i] One individual was observed while perching.

[j] This species was observed on various portions of the MWTF and CSTL sites. State monitor 3 species are monitored to resolve taxonomic uncertainties.

No other species protected under the Endangered Species Act, candidates for such protection, or species listed as threatened, endangered, candidate, sensitive, or monitor by the State of Washington were observed on the sites proposed for the MWTF and CSTL.

Sagebrush habitat is considered priority habitat by the State of Washington, due to its relative scarcity in the State, and to its significant value to many wildlife species (Washington Department of Wildlife 1993). The sagebrush habitat along the proposed CSTL and within the proposed MWTF sites is a requirement for nesting/breeding/foraging by loggerhead shrikes (Table 2), sage sparrows (Table 2), burrowing owls (*Athene cunicularia* - state candidate), sage thrashers (*Oreoscoptes*

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montanus - state candidate), long-billed curlews (*Numenius americanus* - federal candidate 3c and state monitor), Washington ground squirrels (*Spermophilus washingtoni* - state monitor), and sagebrush voles (*Lagurus curtatus* - state monitor). Although the latter five species were not observed during this survey, the habitat should be considered suitable for their use. Although no loggerhead shrike nests were observed during this survey, nests have been observed in the vicinity of the subject areas (unpublished data from loggerhead shrike surveys conducted by Pacific Northwest Laboratory [PNL] between 1988 - 1989). Although no burrowing owls were observed during this survey, owls have been observed in the vicinity of the subject areas (unpublished data from incidental observations made during annual raptor surveys conducted by PNL between 1984 and 1990). Several open areas with low-growing herbaceous vegetation were present on some of the disturbed sites. These areas provide potential nesting habitat for long-billed curlews. Ground squirrels and sage voles were not observed during this survey. However, ground squirrel burrows were occasionally sighted. Without a trapping study, the presence of the Washington ground squirrel and sagebrush vole cannot be evaluated.

Sites proposed for the MWTF and CSTL contain no known raptor nests and are virtually devoid of potential nest sites, e.g. trees and utility poles, for raptors that nest above ground such as ferruginous hawks (*Buteo regalis* - federal candidate 2 and state threatened), Swainson's hawks (*Buteo swainsoni* - state candidate), and red-tailed hawks (*Buteo jamaicensis* - state sensitive). These species nest outside the subject area in the vicinity of 200 East and 200 West. However, the site does provide suitable nesting habitat for short-eared owls (*Asio flammeus*), a ground-nesting species, and species that may nest on the ground such as northern harriers (*Circus cyaneus*), great horned owls (*Bubo virginianus*), and long-eared owls (*Asio otus*). The sites also provide potential foraging habitat for all these raptor species.

POTENTIAL IMPACTS OF MWTF AND CSTL CONSTRUCTION ON SPECIES OF CONCERN

Loggerhead shrikes, sage sparrows, and sage thrashers are species that depend on mature sagebrush habitat. Shrikes are known to select tall big sagebrush as nest sites (Poole 1992). Sage sparrows and thrashers also nest in big sagebrush. Construction of the sites proposed for the MWTF and CSTL would remove sagebrush habitat, precluding these species from nesting there. Development of these sites would also be expected to reduce the value of the area as foraging habitat for individuals of these species nesting in adjacent areas.

Burrowing owls nest in abandoned burrows of other ground-dwelling animals. Development of these sites would remove habitat for prey and displace ground-dwelling animals, thereby reducing the suitability of the area for nesting by burrowing owls.

Sagebrush voles are generally found in association with mature sagebrush habitat, although few have been captured outside the Arid Lands Ecology Reserve. They select

14-PDL-013

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burrow sites near sagebrush which also comprises a portion of their diet. Development of the the MWTF and CSTL sites would remove sagebrush habitat, precluding voles from utilizing the area.

Raptor populations may be negatively impacted by disturbance of nesting during construction of facilities. Sites proposed for the MWTF and CSTL are greater than 3.0 km from any known nest locations of ferruginous hawks or Swainson's hawks. This distance is greater than distances prescribed for minimizing disturbance to the above raptor species [Swainson's hawk - 0.25 km and ferruginous hawk - 0.25 km (Fitzner et al. 1992)], rendering potential disturbance due to construction of facilities negligible or nonexistent. Nest sites of the red-tailed hawk are protected only in urban areas (WDW 1993).

Although the subject area is relatively unimportant as nesting habitat for most raptors, it should be considered a potential portion of their foraging range. Raptor populations may be negatively impacted by altering foraging habitat. Development of the MWTF and CSTL sites would displace small mammal populations which are an important component of the prey base of these species. The effects of habitat alteration may be reduced by leaving habitat within the home range of nesting raptors unchanged. Cody (1985) reported average home range sizes for populations of ferruginous and Swainson's hawks in Oregon, Idaho, Utah, and California; ferruginous hawks ranged from 3.14 to 8.09 km^2 and Swainson's hawks from 1.09 to 3.81 km^2. Poole et al. (1988) reported an average home range size of 6.97 km^2 for Swainson's hawks on Hanford. Average home ranges for ferruginous hawks on Hanford have not been documented. A somewhat conservative estimate of home range radius (the distance around a nest site in which habitat should remain unaltered) for these species may be obtained using the largest home range size and assuming home ranges are circular. Home range radii are thus 1.6 km for ferruginous hawks and 1.49 km for Swainson's hawks (on Hanford). Sites proposed for the MWTF and CSTL are greater than 3.0 km from any known nest locations of these species. Therefore, habitat losses within home ranges of these species are likely to be minimal. However, impacts to foraging ranges of shrikes, thrashers, sage sparrows, and burrowing owls will be more significant.

Construction of the MWTF at 200 East would likely extirpate the individual Piper's daisy observed in the gravel pit. Construction would also probably alter the substrate so as to preclude further colonization of the site by this species.

Development of the MWTF and CSTL sites will negatively impact <u>individuals</u> of the above species. Yet <u>populations</u> of these species, considered as a whole, would probably not be substantially affected because similar sagebrush habitat is still relatively common on Hanford. However, development of these sites will eliminate a large portion of sagebrush habitat directly, and will contribute to fragmentation of the remaining habitat. Fragmentation not only reduces the overall area of habitat available for use, but also alters the size and shape of habitat patches. The response of these species to

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fragmentation cannot currently be predicted in any detail and their level of resiliency is unknown. It is reasonable to expect that the cumulative effects of this and further fragmentation would decrease the long-term viability of these species on Hanford. Therefore, it is essential to develop methods for predicting effects and plans for mitigating the cumulative losses and fragmentation of sagebrush habitat on the Hanford Site.

Sincerely,

J. M. Becker for C. A. Brandt

C. A. Brandt, Ph.D.
Senior Research Scientist
Environmental Sciences Department

CAB: jmb

REFERENCES

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May 2, 1994

Ms. T. White
Dames and Moore
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Dear Ms. White,

Re: Project W-058 (Cross Site Transfer Line)

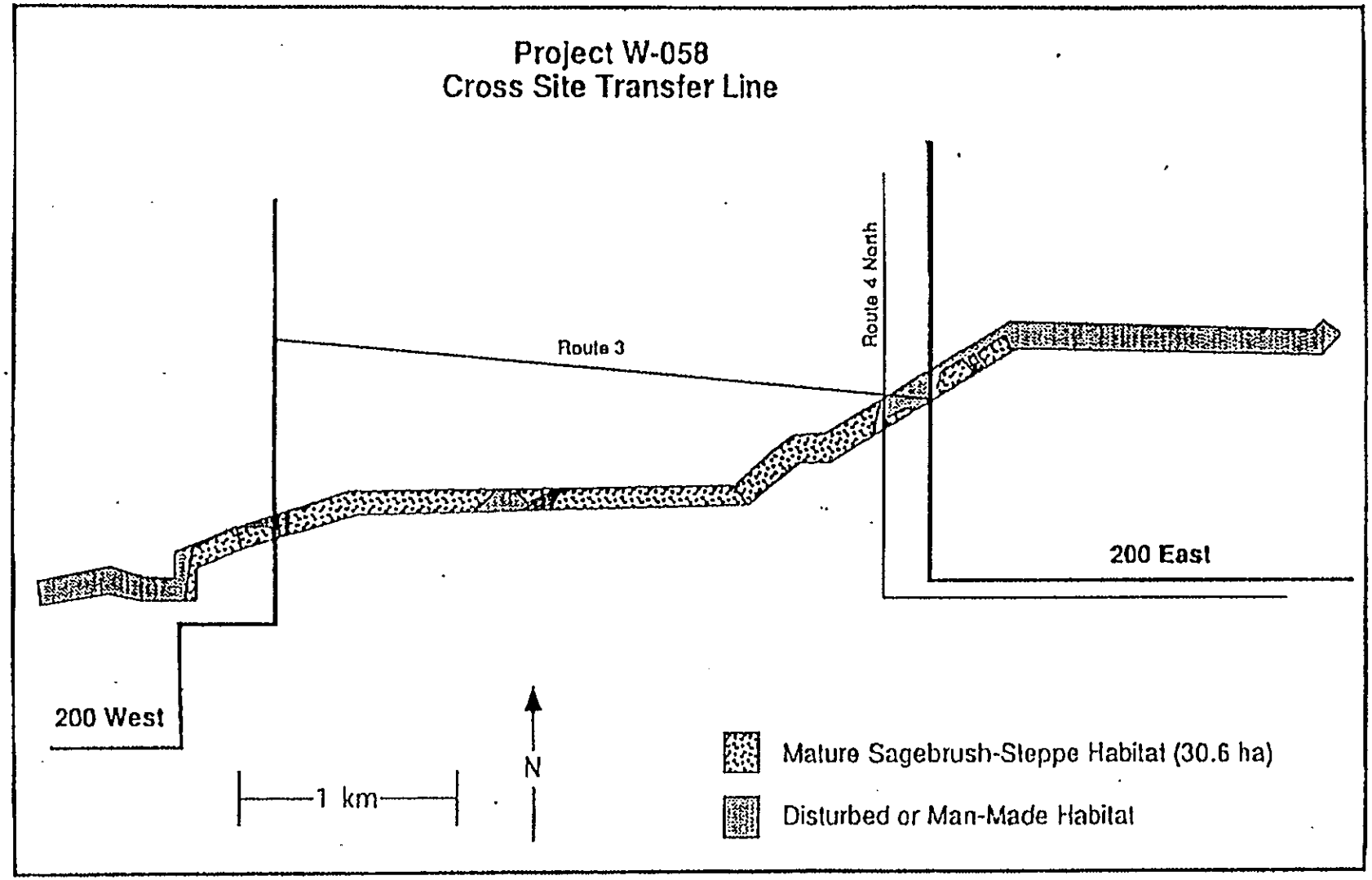
Enclosed is a copy of the habitat map for the Cross Site Transfer Line. I spoke with Dave Every from your Seattle office this morning and he requested I send this to you.

Sincerely,

J. M. Becker

J. M. Becker
Scientist
Environmental Sciences Department

JMB



Note: The habitat map and surface area is based on a width of 100 m, which may be considered to be the area affected by construction. The habitat to be disturbed directly (torn up) is, according to WHC, about 33 m wide. That's too small to show on this map; however, I did recalculate the mature sagebrush habitat that would be torn up based on the 33 m width, which comes out to be 9.8 ha. These estimates of area do not include the portion of the 200 West area that is designated for the MWTF, since it is covered separately.